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A PHARMACOLOGICAL NOTE ON PSALM 58 9

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WHILE THE FIRST HALF of this verse presents some difficulty from the etymological and grammatical point of view, the rendering of the passage is almost uniformly the same on the part of all interpreters, rabbinical and modern. The poet prays that the wicked might dissolve like a snail dissolving in the slime; literally "which passes away into dissolution." A crawling snail or slug leaves a trail of slime, and this was popularly regarded as a gradual dissolution of its body. Snails, both of the so-called naked variety (e. g. *limax*) and of the shell variety (e. g. *helix*), were common in the Mediterranean regions. Of the older authorities, Rashi (1040—1105) translates *šablūl* as *limax* and regards the word as coming from the same root from which the noun *šibboleṭ* is formed, namely *šabal*, meaning "to flow." Altschul (1650) in his *Mešudot David* speaks of the snail as "melting in the sun." Ibn Ezra (1042—1167) gives the same etymology as Rashi. Of the more modern Jewish commentators, Malbim remarks that the snail is stimulated to secrete slime when it is touched. S. R. Hirsch regards *šablūl* as related to *šebil*, "a path", with reference to the slimy track left by the crawling mollusc. Alshech (1550), in his *Romemot El*, gives a similar rendition. Professor Haupt takes the word *šablūl* to come from *balal* (hence Aramaic *tiblālā*), "pour out" or "moisten". The word *temes* is explained by general consensus from the root *masas*, "melt" or "dissolve", and on the side of form, as a noun. All commentators are agreed that the psalmist is referring to the apparent dissolution of the snail during its progress. The present author wishes to suggest a new and somewhat interesting interpretation which equally well or even better fits into the context and also throws some light on obscure passages in rabbinical literature.

Bödecker and Troschel in 1854 (*Ber. Akad. Wiss.*, p. 468) discovered that the secretion of various snails contains a large amount of acid. These investigators examined in particular the species of snail, *Dolium Galea*, and found that it secreted sulphuric acid. These observations have been corroborated by other investigators, notably by Paola Pancheri ("Gli organi e la secrezione del Acido Solforico nei Gastropodi", Napoli, 1869. Mem. estr. dal Vol. 4 degli *Atti della reale accademia delle scienze fisiche e matematiche*). Recently the whole subject of acid secretion by snails has been investigated very carefully, from both the anatomical and the physiological point of view, by K. Schönlein ("Über Säuresecretion bei Schnecken", *Zeit. f. Biol.*, 36, 1898, 523) and by F. N. Schulz ("Beiträge zur Kenntnis der Anatomie und Physiol. einiger Säureschnecken", *Zeit. f. allgemeine Physiol.* V, 1905, 206). Schulz, who has written the most important monograph on the subject, studied in particular the naked snail, *Pleurobranchaea Meckelii*, but also examined various other naked as well as shell-bearing varieties, namely, *Oscanius Membranaceus*, *Oscanius Tuberculatus*, *Cassidaria Echinofores*, a shell snail very much like the common garden variety (*Helix Pomatia*), *Dolium Galea*, *Murex Trunculus* and *Murex Brandaris*. All of these snails were found to secrete sulphuric acid. It was found that the very acid slime secreted by various snails is produced by special glands, tubular in structure. The amount of acid secreted is something extraordinary and serves to emphasize the old adage that microscopic and other small creatures are really more wonderful in their structure than large ones. It has been estimated that the amount of sulphuric acid secreted by *Dolium Galea* is at least 3% and sometimes more. Compare with this the acidity of gastric juice in higher animals. According to Pawlow, estimates of the maximum acidity in the human stomach range between 0.2—0.3% free hydrochloric acid, while the acidity of the gastric juice of the dog varies from 0.46 to 0.56%. The sulphur required to produce this amount of acid comes partly through a breaking down of the protoplasm itself and partly from salts ingested by the animal. The biological significance of this secretion is probably chiefly of a defensive but possibly also in part of an aggressive character.

In view of these remarkable pharmacological findings in

regard to the slimy secretions of snails, the scriptural passage under consideration admits of a new and very appropriate interpretation. The expression "dissolving snail" need not be rendered, as has been done by all interpreters, intransitively, referring to the apparent dissolution of the snail itself during its progress. The word *temes* may just as appropriately be rendered in the transitive sense, in which case the idea expressed is not figurative at all but an actual fact. The snail does actually dissolve or destroy marble, or limestone, or whatever other substratum it may crawl over by virtue of the highly acid content of its slimy secretion. The metaphor therefore may be taken to express the prayer of the Psalmist not only that the wicked may pass into dissolution as a snail appears to do, but that they may perish and dissolve themselves into nothingness because of the destruction that they spread along their path.

Such a translation certainly agrees better with the Targum. We read, *Hēk zāhel tiblālā dē-mā'es orhēh*, "Like the snail that crawleth and melteth (corrodes) its path." Furthermore, this transitive meaning of the word *temes* serves to explain an otherwise obscure passage in the Talmud. In Sabbath 77b we read that the Lord created the snail for the *katit* (*bara šablul le-katit*). The rabbinical commentators render the word *katit* as "scab". It is very plausible to assume that the snail's secretion may act favorably as a caustic in softening scabs and other thickenings of the skin. Acids are used by physicians for destroying granulations and other superfluous growths. In fact, an examination of the old pharmacopœias reveals that snails have been used for that purpose. In the *Thesaurus Pharmacologicus* of Johannes Schroeder, 1672, a *liquor limacum*, or snail juice, is mentioned, of which the following is stated:

"Rubri limaces concisi misceantur cum pari pondere Sal. communis, conjicianturque in manicam Hipp. ut in cella defuant in liquorem, quo dolentes partes podagricæ illinuntur, & verrucæ scalpello prius abrasæ facile averruncantur."

And again in the London *Dispensatory* of William Salmon, 1702, we read on page 260 of a *liquor cochlearum* that "it is good to anoint with in the gout, and it takes away corns and warts."

Zwelfer in his *Pharmacopœia*, 1572, gives directions for an

external application in skin conditions which contains the following ingredients:

Cerussae albae

Succi limionis

Limacum

Album ovarum

Camphore

Boracis

Myrrhae

Thuris

Mastichi

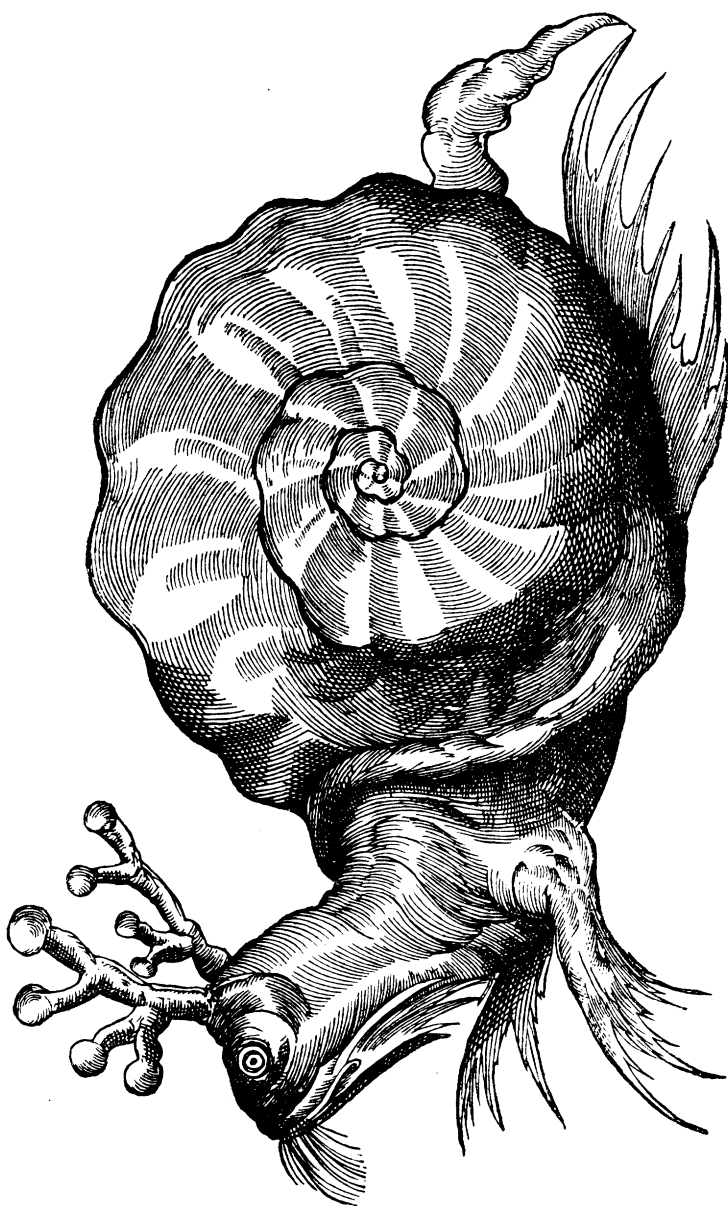
These older pharmacopœias, of course, for the most part copy their information from more ancient authorities, especially Pliny. Pliny mentions the medicinal uses of snails or *cochleae* repeatedly in his Natural History, especially in Book 30. Among other indications for the administration of snail preparations he speaks of podagra or gout (chapter 9, line 43) and "*contra maculas faciei*" or various blemishes of the face (chapter 4).

References to medicinal uses of snails we find even in the later English dispensaries. Thus James, in his *Dispensatory*, London 1747, page 517, states that "the liquor is used to anoint the parts affected with gout and to extirpate warts, being first scraped with a penknife. It also cures prolapsus or falling down of the anus". Even Cullen in his *Materia Medica*, 1789, speaks of the medicinal virtue of snails.

Perhaps the most interesting account of snails from a zoological as well as a medical point of view is found in the long treatise of the medieval writer on natural history, Ulysses Aldrovandus. In his great work on natural history, Bonn, 1606, volume 9, book 3, he gives a long dissertation *de testaceis*, in which he discusses various snails. Thus Book 3, chapter 29, contains 21 folio pages on the subject of snails. The etymology of the names in different languages, the morphological description, the geographical distribution, the embryology and reproduction, the literary allusions, the symbolism, and the uses of snails as foods and medicines are minutely described. In chapters 30 to 39 various species and varieties are distinguished and the book contains many very valuable and beautiful wood-cuts of which one is here reproduced. Aldrovandus describes numerous pathological conditions for which snails or snail extracts

and secretion have been employed. Here again the application of snail juice for the removal of warts and callosities occupies a prominent place. Quoting from book 3, chapter 29, page 386, we read, "Adamus Lonicerus scribit de stillata e limacibus Maio vel Octobrio mense aqua, clavum reffectu, si instilletur, sanare; manuumque verrucas purgare; et ferrum in ea extinctum chalybis induere duritiam tradi. Et Gualther Ryffius verrucas et clavos percidi primum jubet, quoad eius fieri commode potest, deinde linteam hoc liquore madidum imponi." (Adamus Lonicerus writes concerning water which is distilled from snails in the month of May or October, that it cures a tumor by refreshing it, if it is instilled, and that it purges warts of the hands, and that it is handed down in tradition that iron cooled in this puts on the hardness of steel. And Gualther Ryffius orders warts and tumors to be cut through first, as far as can be done properly, then that a linen cloth wet with this liquid be laid on.)

The pharmaceutical history of snails is thus but another illustration among many of the popular and empirical uses of various substances which have in the light of modern science at least a modicum of rational support.



Cochlea ex mari Sarmatico